

# ONKYO SERVICE MANUAL


## STEREO CASSETTE TAPE DECK

### MODEL TA-2044

Black and silver models

|              |                         |
|--------------|-------------------------|
| UDN, UDC, UD | 120V AC, 60Hz           |
| UGV, UG      | 220V AC, 50Hz           |
| UW           | 120 or 220V AC, 50/60Hz |
| UQA, UQB     | 240V AC, 50Hz           |

#### SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK  ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PARTS NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

#### SPECIFICATIONS

|                        |   |
|------------------------|---|
| Track Format:          | 4 tracks, 2 channels  |
| Erasing System:        | AC erase  |
| Tape Speed:            | 4.8 cm/sec. (1-7/8 i.p.s.)  |
| Wow & Flutter:         | 0.04% (WRMS)  |
| Frequency Response:    | 20–16,000 Hz<br>(30–15,000 Hz $\pm$ 3 dB)<br>(normal position tape)<br>20–17,000 Hz<br>(30–16,000 Hz $\pm$ 3 dB)<br>(high position tape)<br>20–19,000 Hz<br>(30–17,000 Hz $\pm$ 3dB)<br>(metal position tape) |
| Signal-to-Noise Ratio: | 60 dB (metal position tape, Dolby NR out).<br>A noise reduction of 10 dB above 5 kHz and 5 dB at 1 kHz is possible with Dolby B NR. A noise reduction of 20 dB at 5 kHz is possible with Dolby C NR.          |
| Input Jacks:           | Line IN: 2<br>Minimum input level: 50mV<br>Input impedance: 50 kohms  |

**ONKYO**  
AUDIO COMPONENTS

|                    |   |
|--------------------|---|
| Outputs:           | Line OUT: 2   |
|                    | Std output level: 500mV (0 dB)                                |
|                    | Opt load impedance:<br>over 50 kohms                          |
| Headphone Jack: 1  | Opt load impedance:<br>8 – 200 ohms                           |
|                    |   |
| Motors:            | DC servo motor: 1<br>DC motor: 2                              |
| Heads:             | Rec/pb head: Special Hard<br>Permalloy<br>Erase head: Ferrite |
| Semiconductors:    | TR: 57 Diodes: 36 IC: 9<br>LED: 10                            |
| Power Consumption: | 27 watts  |
| Dimensions:        | 435(W) x 112(H) x 371(D) mm<br>(17-1/8" x 4-3/8" x 14-5/8")   |
| Weight:            | 6.0 kg. (13.2 lbs.)   |

Specifications and external appearance are subject to change without notice because of product improvements.

## SERVICE PROCEDURES

### 1. Replacing the lamps

This unit used the lamps listed below.

| Circuit No. | Parts No. | Description      |
|-------------|-----------|------------------|
| PL-902      | 210149    | PL14V 0.06A W3.0 |
| PL-901      | 210165    | PL14V 150mA      |

Caution; Before replacing the lamps, be sure to unplug the power supply cable.

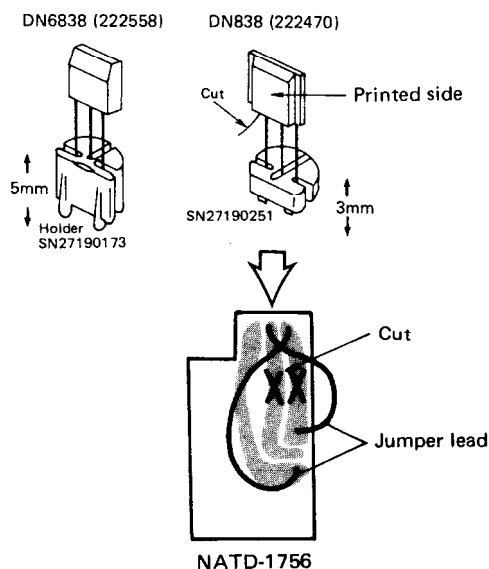
### 2. Instruction resistance measurement

Connect the insulating-resistance tester between the plug of power supply cord and chassis.

|                 |            |                                      |
|-----------------|------------|--------------------------------------|
| Specifications; | D model    | 500 V $3.3 \pm 0.33 \text{ M}\Omega$ |
|                 | G/W models | 500 V more than 10 $\text{M}\Omega$  |

### 3. Replacing the Hall ICs

Cautions: As the position of leg of DN6838 and DN838 differ, use the same Hall IC when replacing.



## FEATURES

### Microcomputer Controlled Multi-Program System

A highly efficient microcomputer is used to provide a wide range of programmable functions. The song location function rapidly winds tape directly to the beginning of any particular song on a cassette up to nine songs away from the present location in either direction. A repeat function repeatedly plays a particular song or the section of a cassette between the [000] tape counter point and either the beginning or end of the cassette up to ten times. There's also an automatic music search function that plays about the first eight seconds of each song in the forward or reverse direction.

### Auto Space Rec Mute Button

Press this button while you're making a recording to automatically enter a blank section of tape about five seconds long. Once the blank section has been entered, the TA-2044 will automatically switch to the REC-PAUSE mode. To continue recording, simply press the PLAY button. This function is convenient for temporarily interrupting recording, editing tape during dubbing and inserting unrecorded sections long enough for the automatic continuous song location function to detect.

### Special Hard Permalloy Head Designed for Metal Tapes

The special process used to obtain the extra hard permalloy head surface ensures greater resistance to wear and a better saturation flux density in order to take full advantage of high performance metal tapes. The hyperbolic shape also improves head-to-tape contact.

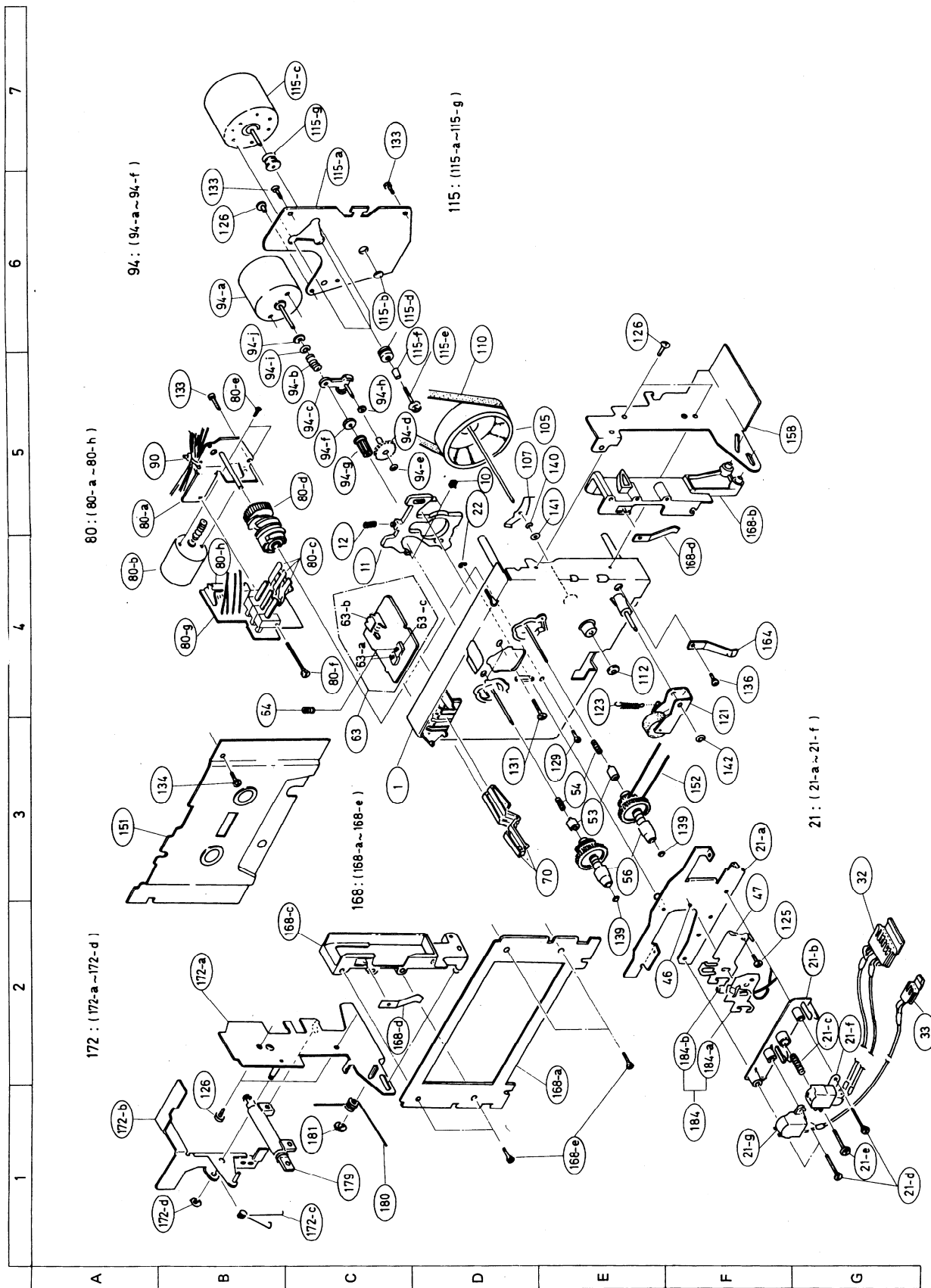
### 2-Motor Tape Transport with Separate Head Assembly Motor

The tape transport system, along with the heads, determines the level of performance of a cassette deck. To guarantee extremely stable and accurate transport the TA-2044 uses a DC servo controlled capstan motor. This motor is frequency or instantaneous changes in load. A highly reliable, simple drive transmission system and precision vertical cassette holder further enhance overall accuracy and stability. As a result, wow and flutter is under 0.04%. In addition, separate DC motors drive the reel tables and head base and the head assembly is constructed to move silently with no annoying clicks.

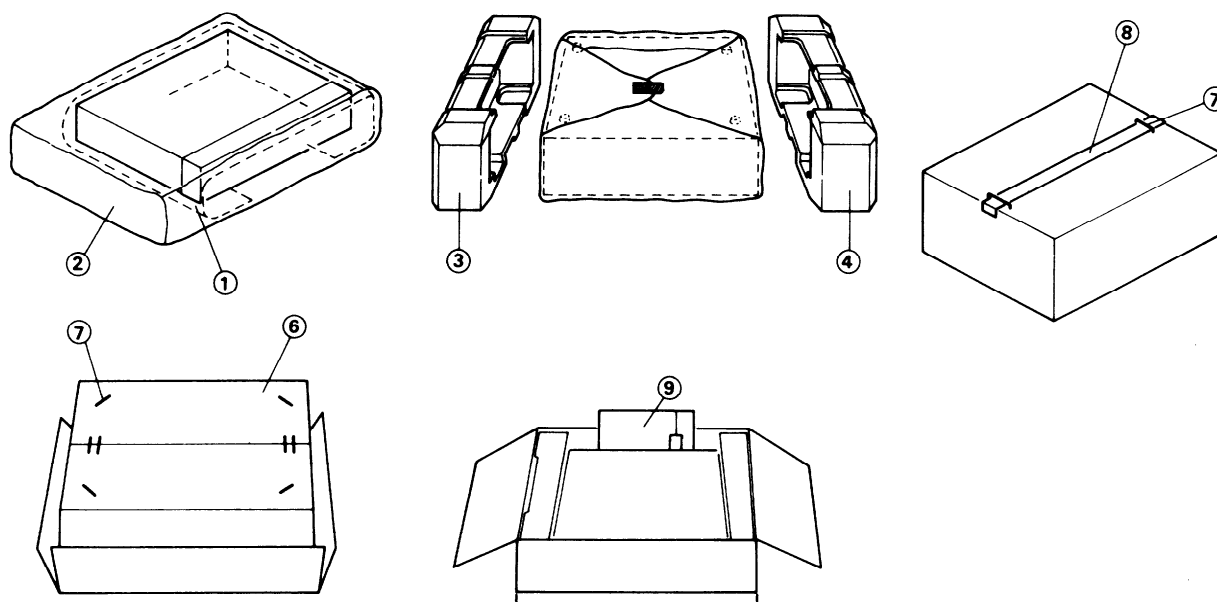
### Dolby B and C Noise Reduction

Along with standard Dolby B NR, the TA-2044 also has the even more effective Dolby C NR system. Dolby C NR reduces tape background noise by 20 dB at 5 kHz, about 3 times more than Dolby B NR. In addition to its wide band noise reduction, Dolby C NR uses a sliding band technique that varies the band width of noise reduction according to the input level, thereby avoiding noise "pumping". Dolby C NR also has an anti-saturation effect to reduce the chance of tape saturation in the high range. All these features combine to eliminate the adverse effects on tape sound that other noise reduction systems can cause.

# TAPE MECHANISM-EXPLODED VIEW



# PACKING VIEW



## D model

| REF. NO. | PARTS NO.           | DESCRIPTION                 |
|----------|---------------------|-----------------------------|
| 1        | 29095012-1          | 500x800mm, Protection sheet |
| 2        | 290311A             | 620x550mm, Poly bag         |
| 3        | 29090769            | Pad, right                  |
| 4        | 29090770            | Pad, left                   |
| 6        | 29050790            | Master carton box           |
| 7        | 282301              | Sealing hook                |
| 8        | 260012              | W-500mm, Damplon type       |
| 9        | Accessory bag ass'y |                             |
|          | 29340714            | Instruction manual          |
|          | 253074              | Connection cable            |
|          | 29365006-1          | Warranty card               |
|          | 29358002            | Service station list        |
|          | 29100005            | 220x330mm, Poly bag         |

## G/W model

| REF. NO. | PARTS NO.           | DESCRIPTION                 |
|----------|---------------------|-----------------------------|
| 1        | 29095012-1          | 500x800mm, Protection sheet |
| 2        | 290311A             | 620x550mm, Poly bag         |
| 3        | 29090769            | Pad, right                  |
| 4        | 29090770            | Pad, left                   |
| 6        | 29050790            | Master carton box           |
| 7        | 282301              | Sealing hook                |
| 8        | 260012              | W-500mm, Damplon tape       |
| 9        | Accessory bag ass'y |                             |
|          | 29340715            | Instruction manual          |
|          | 253074              | Connection cable            |
|          | 29365005-3          | Warranty card (V)           |
|          | 25055040            | CV-K-2, Conversion plug (W) |
|          | 29100005            | 220x330mm, Poly bag         |

(V): Only West Germany model

(W): Only 120/220V model

# ADJUSTMENT PROCEDURES

## PRECAUTIONS

- Before adjustment, clean the following parts with an alcohol moistened swab.
  - \* record/playback head      \* erase head
  - \* pinch roller                \* capstan
- Do not use magnetized screwdriver for adjustments.
- Demagnetize record/playback head with a head demagnetizer.

## TEST EQUIPMENT/TOOLS REQUIRED:

Audio oscillator  
Digital frequency counter

Oscilloscope

Attenuator

AC voltmeter

Non-magnetic screw driver

Blank tapes (completely erased)

NORMAL ..... NEW UD90  
HIGH ..... NEW XL-II90  
METAL ..... NEW MX60

Test tapes

VTT-658 : 10 KHz, -15dB  
MTT-111 : 3 kHz, -10dB  
MTT-150 : Dolby level calibration  
          400Hz, tone 200nWb/m  
TW-2111 : Torque meter

| Item |                 | Connection of instrument                                | Line input                   | Test tape    | Mode         | Output indicator  | Adjustment point             | Adjust                                      | Remarks  |
|------|-----------------|---|------------------------------|--------------|--------------|-------------------|------------------------------|---|--|
| 1    | Playback torque |   |                              | TW-2111      | PB           | TW-2111           | R709                         | 35 to 55gcm                                 |  |
| 2    | Tape speed      | Frequency counter to LINE output terminal               |                              | MTT-111      | PB           | Frequency counter | Semi-fixed on the moter      | 3,000 to 3,010Hz                            |  |
| 3    | Head azimuth    | AC voltmeter and oscillo- scope to LINE output terminal |                              | VTT-658      | PB           | AC voltmeter      | Head azimuth screws          | Maximum and same phase at channels L and R. | See fig. 1<br>Set the semi-fixed resistors R123 and R124 to center position. |
| 4    | Playback level  | AC voltmeter to terminals TP-401 and TP-402             |                              | MTT-150      | PB           | AC voltmeter      | R123 (Ch. L)<br>R124 (Ch. R) | 580mV                                       |  |
| 5    | Meter           |   |                              | MTT-150      | PB           | Level meter       | R606                         | 0dB indicator light on                      |  |
| 6    | Bias current    | Fig. 2  | 1kHz, −20dB and 12kHz, −20dB | NEW XL-II 90 | REC/<br>PB   | AC voltmeter      | R423 (Ch. L)<br>R424 (Ch. R) | Same level at REC/PB                        | INPUT VOLUME<br>..... maximum  |
| 7    | Record level    | Fig. 2  | 1kHz                         |              | REC<br>PAUSE | AC voltmeter      | Attenuator or AF OSC output  | 580mV                                       | INPUT VOLUME<br>..... maximum  |
|      |                 |   |                              |              | REC/PB       | AC voltmeter      | R401, R402                   | Same level at REC/PB                        |  |

FF, REW torque ..... 70 ~ 130gcm

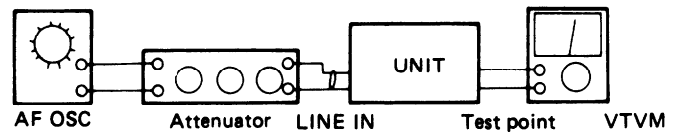
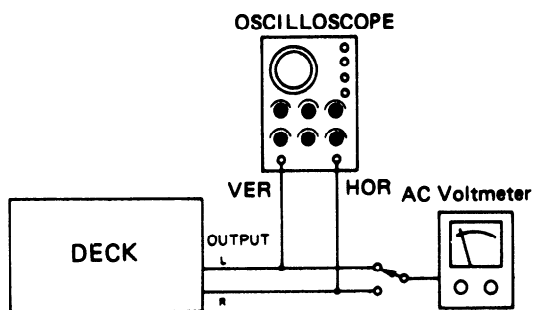
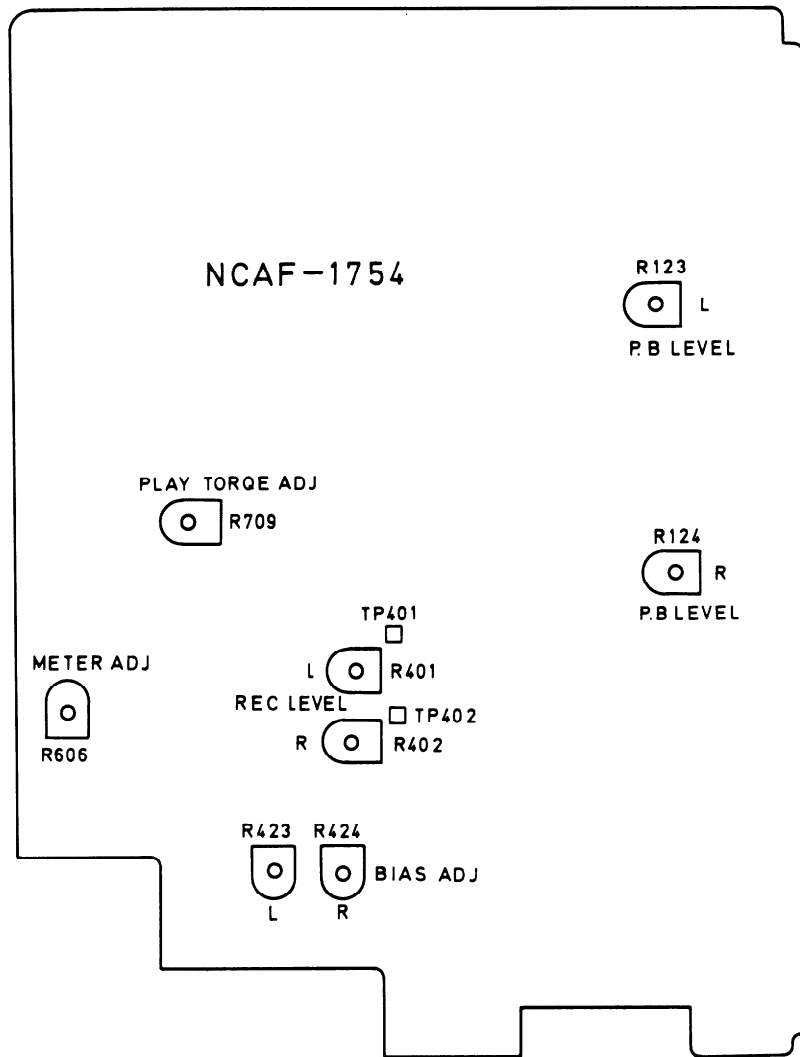


fig-2

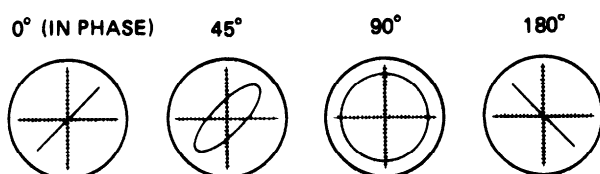
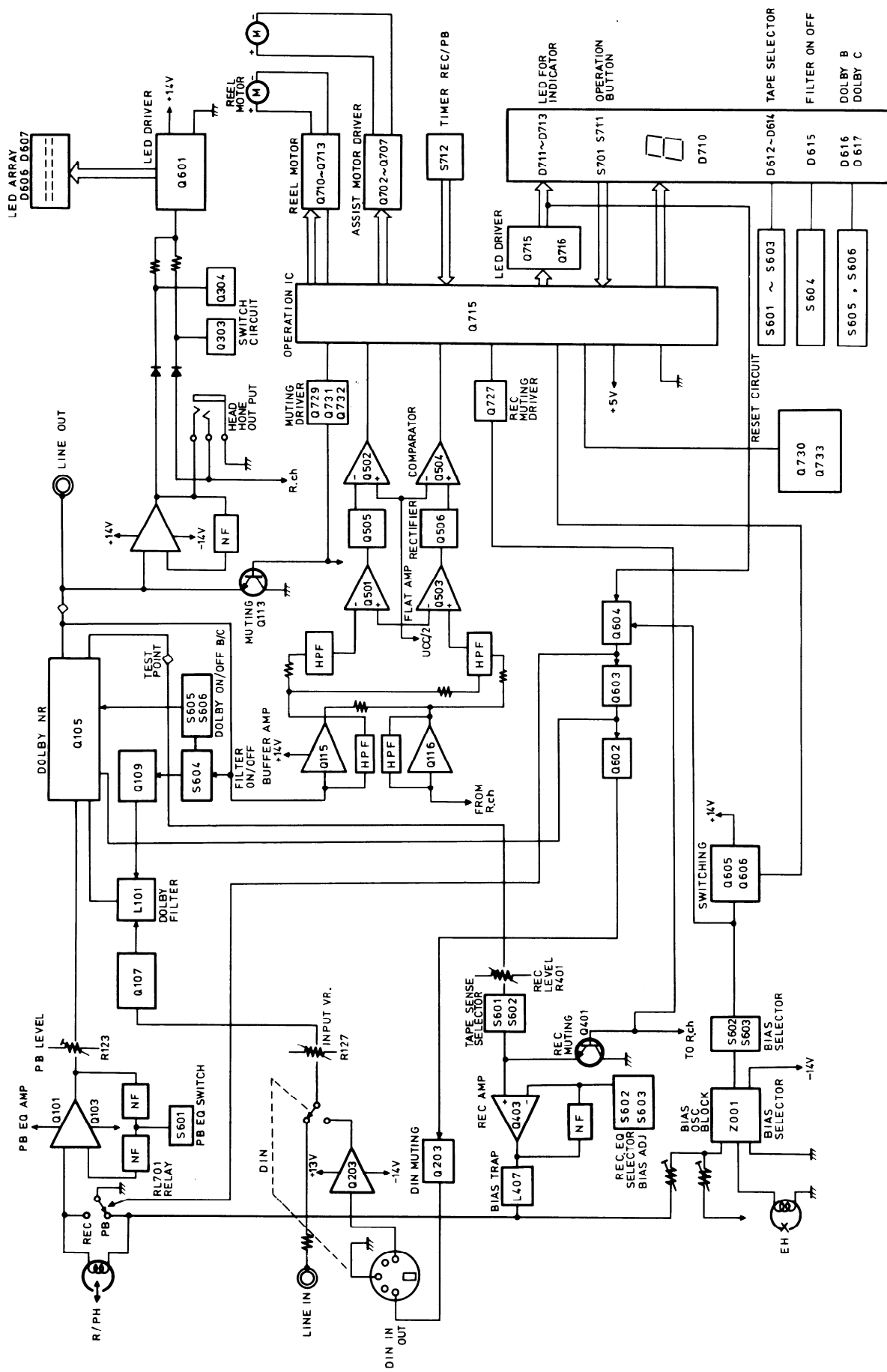
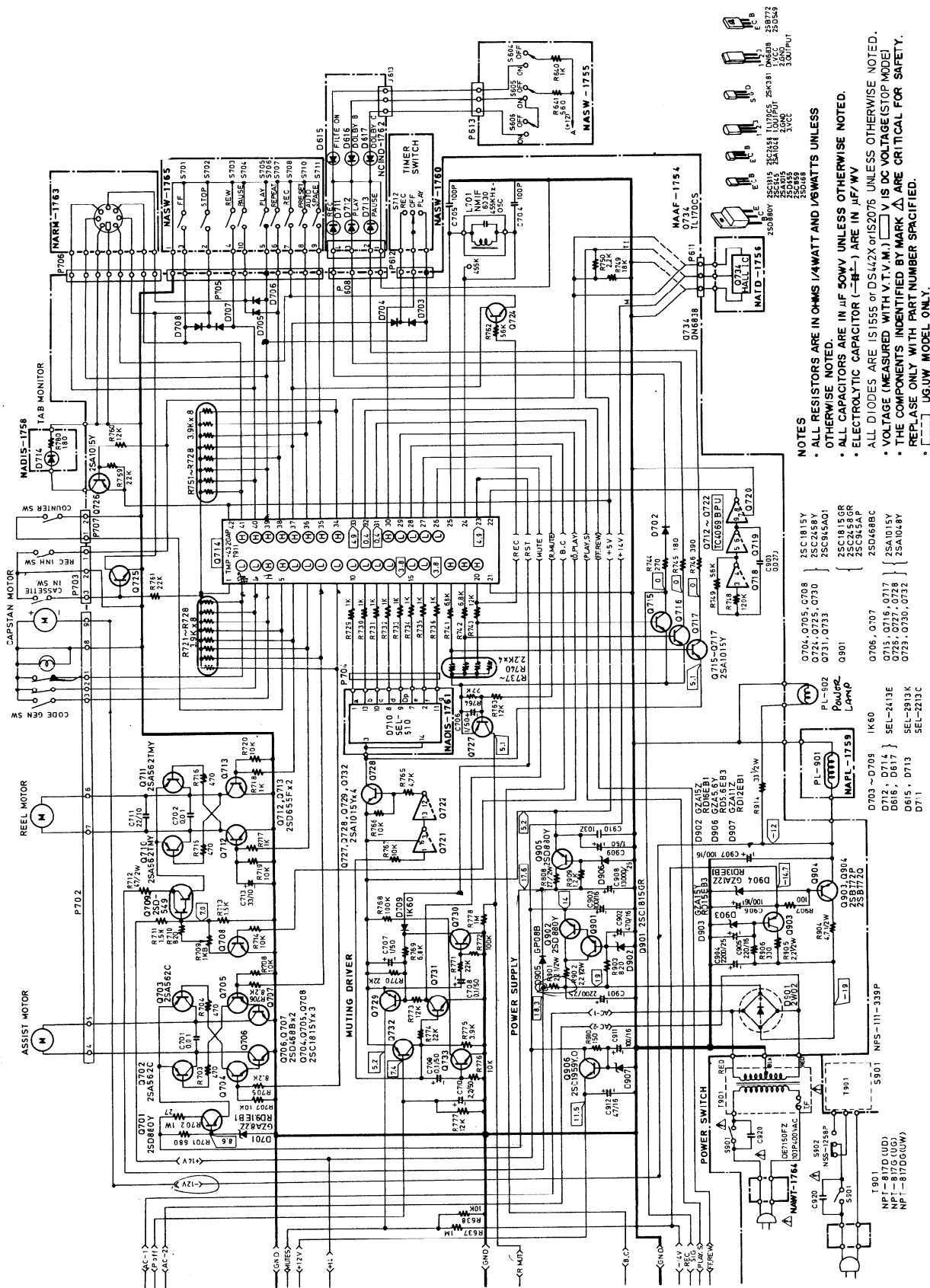


fig. 1 Confirming phase relationship

## BLOCK DIAGRAM



## SCHEMATIC DIAGRAM



## NOTES

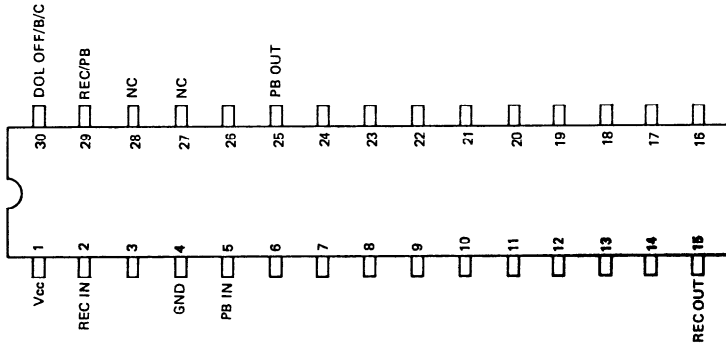
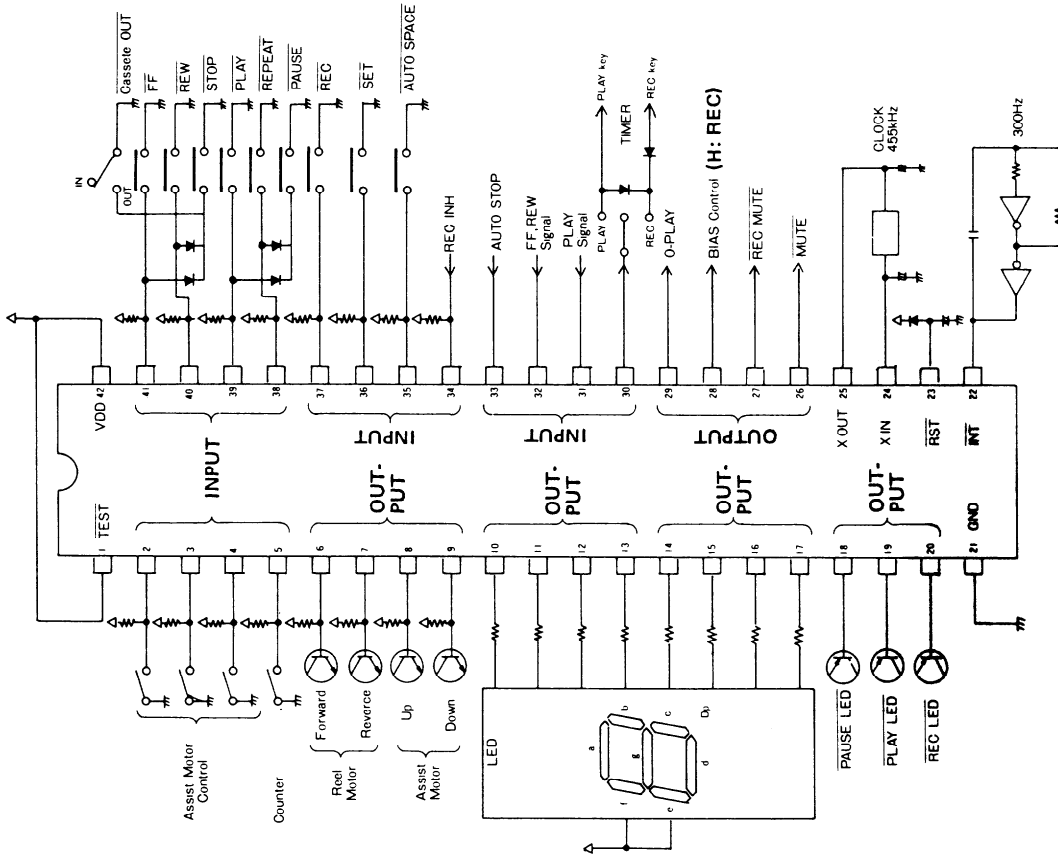
- ALL RESISTORS ARE IN OHMS /4WATT AND /6WATTS UNLESS OTHERWISE NOTED.
- ALL CAPACITORS ARE IN  $\mu F$  50WV UNLESS OTHERWISE NOTED.
- ELECTROLYTIC CAPACITOR (— $\square$ —) ARE IN  $\mu F$ /WV
- ALL DIODES ARE 1S1555 or DS442X or 1S2076 UNLESS OTHERWISE NOTED.
- VOLTAGE (MEASURED WITH V.T.V.M.) ☐ V IS DC VOLTAGE (STOP MODE)
- THE COMPONENTS IDENTIFIED BY MARK  $\Delta$  ARE CRITICAL FOR SAFETY.
- REPLACE ONLY MODEL NUMBER SPECIFIED.
- ☐ UGUW MODEL ONLY.



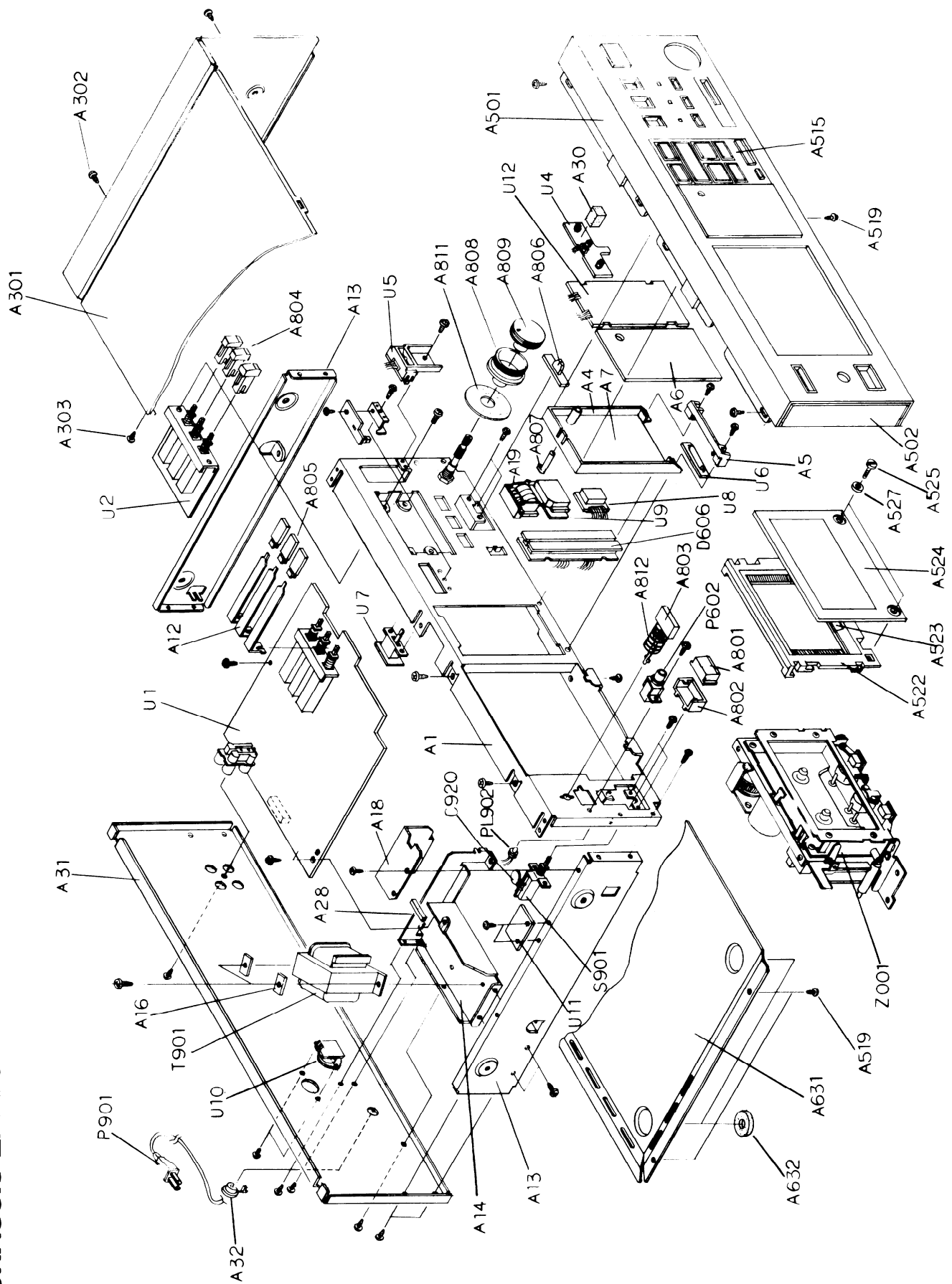


TMP4320AP (7911) MICROCOMPUTER

HA12058NT (DOLBY B & C TYPE NOISE REDUCTION SYSTEM)



## CHASSIS EXPLODED VIEW



# CHASSIS EXPLODED VIEW-PARTS LIST

| REF. NO. | PARTS NO. | DESCRIPTION                      | REF. NO. | PARTS NO.   | DESCRIPTION                      | REF. NO.   | PARTS NO. | DESCRIPTION  |
|----------|-----------|----------------------------------|----------|-------------|----------------------------------|------------|-----------|--|
| A1       | 27110193C | Front bracket                    | A504     | 27267238A   | Guide, eject                     | C920a      | 27300601  | Cover, capacitor                                   |
| A2       | 27140753  | Bracket, headphone               | A505     | 272672389   | Guide, eject (B)                 | D606, D607 | 225129    | SEL-8833, LED, level meter                         |
| A3       | 27140811  | Bracket, pcb                     | A506     | 27267206A   | Guide, power                     | PL902      | 210149    | PL14V0.06AW-3.0, Lamp                              |
| A4       | 27190226  | Holder, LED                      | A507     | 27267235A   | Guide, power (B)                 | P602       | 25045132  | HKJ-1607-01-020, Stereo                            |
| A5       | 27300532  | Holder                           | A508     | 27262212    | Plate                            |            |           | headphone jack                                     |
| A6       | 28191203  | Clear plate                      | A509     | 28191204    | Clear plate                      | △ P901     | 253099B   | AS-UC3, Power supply cable (D)                     |
| A7       | 28130196  | Dial plate                       | A510     | 28191205    | Clear plate, tab                 |            | 253083-1  | AS-CEE, Power supply cable (G/W)                   |
| A8       | 28199095  | Film                             | A511     | 28191206    | Clear plate, tab (B)             | P902       | 2000218   | NSAS-12P-122, Socket for meter                     |
| A9       | 834430108 | 3TTS+10B (BC), Tapping screw     | A512     | 27267240    | Guide, push                      | △ S901     | 25035375  | NPS-111-L399P, Power switch                        |
| A10      | 833430080 | 3TTP+8P (BC), Tapping screw      | A513     | 27267241    | Guide, push (B)                  | △ S902     | 25065123  | NSS-1258P, Voltage selector switch (W)             |
| A11      | 27273022  | Joint C                          | A515     | 28198587    | Facet                            |            |           |  |
| A12      | 27115139A | Side bracket                     | A516     | 28198577    | Facet, power                     | △ T901     | 230741-1  | NPT-817D, Power transformer (D)                    |
| A13      | 27130331D | Bracket, power transformer       | A517     | 27267264    | Guide, selector                  |            | 230742-1  | NPT-817G, Power transformer (G)                    |
| A14      | 86414010  | FWN4×10FN, Flange nut            | A518     | 27267265    | Guide, selector (B)              |            | 270743-1  | NPT-817DG, Power transformer (W)                   |
| A15      | 870065    | Washer, power transformer        | A519     | 27267243A   | Guide, timer                     | U1         | 11128554  | NAAF-1754, Rec/pb amplifier pc board ass'y (D)     |
| A16      | 838440109 | 4TTB+10C (BC), Tapping screw     | A520     | 27267244A   | Guide, timer (B)                 |            |           |  |
| A17      | 28175074  | Insulator plate                  | A521     | 27267284    | Guide ass'y                      |            | 11134554A | NAAF-1754a, Rec/pb amplifier pc board ass'y (G/W)  |
| A18      | 24601143  | Tape counter                     | A522     | 27267285    | Guide ass'y (B)                  | U2         | 11128555  | NASW-1755, Dolby switch pc board ass'y             |
| A19      | 834426068 | 2.6TTS+6B (BC), Tapping screw    | A523     | 833420068   | 3TTP+6B (BC), Tapping screw      |            |           |  |
| A20      | 834430068 | 3TTS+6B (BC), Tapping screw      | A524     | 838430068   | 3TTB+6B (BC), Tapping screw      |            |           |  |
| A21      | 831430088 | 3TTB+8B, Tapping screw           | A525     | 838430068   | 3TTB+8B (BC), Tapping screw      | U3         | 11128556  | NATD-1756, Hall IC pc board ass'y                  |
| A22      | 834426068 | 2.6TTS+6B (BC), Tapping screw    | A526     | 28400129    | Cassette lid                     | U4         | 11128557  | NAIND-1757, Tape selector indicator pc board ass'y |
| A23      | 838130088 | 3TTB+8B, Tapping screw           | A527     | 28191207    | Clear plate                      |            |           |  |
| A24      | 82143006  | 3P+6F (BC), Pan head screw       | A528     | 28400147    | Window                           | U5         | 11128558  | NADIS-1758, Tab indicator pc board ass'y           |
| A25      | 82142604  | 2.6P+4F (BC), Pan head screw     | A529     | 28400148    | Window (B)                       |            |           |  |
| A26      | 28170014  | Bushing                          | A530     | 27300397-1A | Special screw                    | U6         | 11128559  | NAPL-1759, Lamp pc board ass'y                     |
| A27      | 82142604  | Film                             | A531     | 800134      | Nut                              | U7         | 11128560  | NASW-1760, Timer switch pb board ass'y             |
| A28      | 28199091  | Cushion                          | A532     | 870100      | Washer                           |            |           |  |
| A29      | 28140492  | Back panel (D)                   | A533     | 27170150    | Bottom board                     | U8         | 11128561  | NADIS-1761, LED pc board ass'y                     |
| A30      | 27120524  | Back panel (G)                   | A534     | 27175011C   | Leg                              | U9         | 11128562  | NAIND-1762, Operation indicator pc board ass'y     |
| A31      | 27120525  | Back panel (W)                   | A535     | 838430068   | 3TTB+6B (BC), Tapping screw      |            |           |  |
| A32      | 27120526  | SR-3P-4, Strainrelief (D)        | A536     | 28321023    | Knob, power                      | U10        | 11128563  | NARM-1763, Remote control terminal pc board ass'y  |
| A33      | 270025    | SR-4K-4, Strainrelief (G/W)      | A537     | 28321024    | Knob, power (B)                  |            |           |  |
| A34      | 801230    | 3TTS+8BQ (BC), Tapping screw     | A538     | 28320828C   | Knob, eject                      | U11        | 11128564  | NAWT-1764, Terminal pc board ass'y                 |
| A35      | 834430108 | 3TTS+10B (BC), Tapping screw     | A539     | 28321027    | Knob, eject (B)                  | U12        | 11128565  | NASW-1765, Operation switch pc board ass'y         |
| A36      | 82142604  | 2.6P+4F (BC), Pan head screw     | A540     | 28321028    | Knob, selector (B)               |            |           |  |
| A37      | 28140373  | 7x30x10mm, Cushion               | A541     | 28321148    | Knob, selector (B)               | Z0001      | 244051    | NDM-46, Tape mechanism ass'y                       |
| A38      | 28140373  | Bracket, DIN (G/W)               | A542     | 28321149    | Knob, band                       |            |           |  |
| A39      | 27140577  | 3P+6F (BC), Pan head screw (G/W) | A543     | 28321073A   | Knob, band (B)                   |            |           |  |
| A40      | 82143006  | Top cover                        | A544     | 28321074A   | Knob, timer                      |            |           |  |
| A41      | 28184180  | Top cover (B)                    | A545     | 28321035    | Knob, timer (B)                  |            |           |  |
| A42      | 28184181  | 4TTB+8B (BC), Tapping screw      | A546     | 28321036    | Knob, counter                    |            |           |  |
| A43      | 838440089 | 3TTB+8B (BC), Tapping screw      | A547     | 28321218    | Knob R                           |            |           |  |
| A44      | 838430088 | 3x10x36mm, Cushion               | A548     | 28321031    | Knob R (B)                       |            |           |  |
| A45      | 11128121  | Front panel ass'y                | A549     | 28321032    | Knob L                           |            |           |  |
| A46      | 11148121  | Front panel ass'y (B)            | A550     | 28321033    | Knob L (B)                       |            |           |  |
| A47      | 28125133  | End cap L                        | A551     | 28321034    | Cushion                          |            |           |  |
| A48      | 28125133A | End cap L (B)                    | A552     | 28140185    | Spring                           |            |           |  |
| A49      | 28125134  | End cap R                        | A553     | 27180179    | DE7150FZ103PAC400V, Capacitor IS |            |           |  |
| A50      | 28125135A | End cap L (B)                    |          |             |                                  |            |           |  |

NOTES: (D): Only 120V model  
(G): Only 220V model  
(W): Only 120/220V model  
(B): Only back model

NOTE: THE COMPONENTS IDENTIFIED BY MARK △ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PARTS NUMBER SPECIFIED.

# TAPE MECHANISM-PARTS LIST

| PLACE      | REF. NO. | PARTS NO. | DESCRIPTION                             | PLACE      | REF. NO. | PARTS NO. | DESCRIPTION                      |
|------------|----------|-----------|---|------------|----------|-----------|----------------------------------|
| C3         | 1        | 24610960  | Chassis                                 | E3         | 129      | 801250    | 2x4mm, Pan head screw            |
|            | 10       | 24610376  | Brake rubber                            | D3         | 131      | 82512614  | 2.6x14mm, Pan head screw         |
| C4         | 11       | 24610961  | Brake plate                             | B5, B6, C7 | 133      | 833426105 | 2.6x10mm, Tapping screw          |
| C4         | 12       | 24605466  | Spring                                  | B3         | 134      | 833126055 | 2.6x5mm, Tapping screw           |
|            | 21       | 24610962  | Head base ass'y                         | F4         | 136      | 837120058 | 2.6x5mm, Tapping screw           |
| F3         | 21a      | 24610966  | Head base                               | E2, F3     | 139      | 24610349  | 1.8x3.2x0.5mm, Washer            |
| G2         | 21b      | 24610967  | Head stand                              | E5         | 140      | 24610515  | 2.6x4.7x0.25mm, Washer           |
| G2         | 21c      | 24605185  | Spring                                  | E5         | 141      | 24610972  | 2.6x7x0.13mm, Washer             |
| G1         | 21d      | 82512012  | 2x12mm, Baining screw                   | F3         | 142      | 24610973  | 2.7x6x0.5mm, Washer              |
| G1         | 21e      | 801198    | 2x14mm, Flange screw                    | A3         | 151      | 24610959  | Cassette panel                   |
| G2         | 21f      | 24600018  | Rec/pb head <i>24600040</i>             | F3         | 152      | 24602232  | Belt                             |
| F1         | 21g      | 24600041  | Erase head                              | G5         | 158      | 24610939  | Bracket R                        |
| E3         | 22       | 893030    | E3, Circlip                             | F4         | 164      | 24605188  | Cassette holding spring          |
| G3         | 32       |           | Connector ass'y                         |            | 168      | 24610940  | Cassette holder ass'y            |
| G2         | 33       |           | Connector ass'y                         | E1         | 168a     | 24610949  | Bracket                          |
| F2         | 46       | 24610943  | 3mm, Steelball                          | F5         | 168b     | 24610849  | Holder R                         |
| F2         | 47       | 24610963  | Head holding plate                      | C2         | 168c     | 24610848  | Holder L                         |
| E3         | 53       | 24610964  | Spring holder                           | C2, F4     | 168d     | 24605463  | Cassette spring                  |
| E3         | 54       | 24605466  | Spring                                  | E1         | 168e     | 835426082 | 2.6x8mm, Flat head tapping screw |
| E3         | 56       | 24602233  | Reel stand                              |            | 172      | 24610974  | Bracket ass'y                    |
| C3         | 63       | 24606179  | Tab/Cassette in detector pc board ass'y | B2         | 172a     | 24610975  | Bracket L                        |
| C4         | 63a      | 24606180  | Pc board                                | A1         | 172b     | 24610976  | Canceller lever ass'y            |
| C4         | 63b      | 25055100  | Post                                    | C1         | 172c     | 24605407  | Spring                           |
| C4         | 63c      | 25035389  | Switch                                  | B1         | 172d     | 893030    | E3, Circlip                      |
|            | 64       | 24605447  | Spring                                  | C1         | 179      | 24610942  | Damper unit                      |
| E3         | 70       | 24603274  | Switch lever                            | C1         | 180      | 24605456  | Spring                           |
|            | 80       | 24601144  | PAD unit ass'y                          | C1         | 181      | 891024    | Ring CS                          |
| A5         | 80a      | 24610968  | Chassis                                 | F1         | 184      | 24606168  | Lamp holder ass'y                |
| A4         | 80b      | 24601103  | Motor                                   | F2         | 184a     | 24610498  | Lamp holder                      |
| C4         | 80c      | 24606182  | Leafswitch                              | F2         | 184b     | 24606173  | 14V, 50mA, Lamp                  |
| C5         | 80d      | 24602133  | Cam gear                                |            |          |           |                                  |
| B5         | 80e      | 82112003  | 2x3mm, Pan head screw                   |            |          |           |                                  |
| C4         | 80f      | 833125209 | 2.5x20mm, Pan head screw                |            |          |           |                                  |
| B4         | 80g      | 24606181  | Pc board                                |            |          |           |                                  |
| B4         | 80h      | 25055106  | Post                                    |            |          |           |                                  |
| A5         | 90       | 260208    | Binder                                  |            |          |           |                                  |
|            | 94       | 24601145  | Reel motor ass'y                        |            |          |           |                                  |
| B6         | 94a      | 24601054  | Reel motor                              |            |          |           |                                  |
| B5         | 94b      | 24605467  | Spring                                  |            |          |           |                                  |
| C5         | 94c      | 24602235  | Wheel lever                             |            |          |           |                                  |
| C5         | 94d      | 24602236  | Wheel                                   |            |          |           |                                  |
| C5         | 94e      | 24610969  | Washer                                  |            |          |           |                                  |
| C5         | 94f      | 24610970  | Felt                                    |            |          |           |                                  |
| C5         | 94g      | 24602237  | Motor wheel                             |            |          |           |                                  |
| C5         | 94h      | 24610981  | Washer                                  |            |          |           |                                  |
| B5         | 94i      | 24610374  | Washer                                  |            |          |           |                                  |
| B6         | 94j      | 24610373  | Spring holder                           |            |          |           |                                  |
| E5         | 105      | 24602240  | Flywheel                                |            |          |           |                                  |
| D5         | 107      | 24605452  | Thrust spring                           |            |          |           |                                  |
| D5         | 110      | 24602134  | Flat belt                               |            |          |           |                                  |
| E4         | 112      | 23610673  | Washer                                  |            |          |           |                                  |
|            | 115      | 24610965  | Flywheel plate ass'y                    |            |          |           |                                  |
| C6         | 115a     | 24610971  | Flywheel plate                          |            |          |           |                                  |
| C6         | 115b     | 24610671  | Thrust holder                           |            |          |           |                                  |
| B7         | 115c     | 24601085  | Capstan motor                           |            |          |           |                                  |
| C6         | 115d     | 24610451  | Cushion                                 |            |          |           |                                  |
| D6         | 115e     | 801261    | Pan head screw                          |            |          |           |                                  |
| C5         | 115f     | 24610807  | Spacer                                  |            |          |           |                                  |
| C7         | 115g     | 24601107  | Motor pulley                            |            |          |           |                                  |
| F3         | 121      | 24602234  | Pinch arm                               |            |          |           |                                  |
| E4         | 123      | 24605370  | Spring                                  |            |          |           |                                  |
| F2         | 125      | 833125069 | 2.5x8mm, Pan head screw                 |            |          |           |                                  |
| B1, B6, E6 | 126      | 833125059 | 2.5x5mm, Pan head screw                 |            |          |           |                                  |

# PRINTED CIRCUIT BOARD PARTS LIST

## REC/PB AMPLIFIER PC BOARD ASS'Y (NAAF-1754)

CIRCUIT NO. PARTS NO. DESCRIPTION

|                    |            |                    |
|--------------------|------------|--------------------|
| <b>ICs</b>         |            |                    |
| Q105, Q106         | 222729     | HA12058NT          |
| Q301, Q302         | 222652     | M5218L             |
| Q403, Q404         | 222465     | NJM4558D           |
| Q501-Q504          | 222604,    | LM324N,            |
|                    | 222681 or  | IR3702 or          |
|                    | 222695     | LA6324             |
| Q601               | 222507     | TA7612AP           |
| Q714               | 222682     | TMP4320AP-7911     |
| Q718-Q723          | 222840692  | TC4069UBP          |
| <b>Transistors</b> |            |                    |
| Q101-Q104          | 2212256 or | 2SC2458 (LL) or    |
|                    | 2211896    | 2SC1815 (LL)       |
| Q107, Q108         | 2212115,   | 2SC2458 (GR),      |
|                    | 2211255 or | 2SC1815 (GR) or    |
|                    | 2210746    | 2SC945A (P)        |
| Q109, Q110         | 2212114,   | 2SC2458 (Y),       |
| Q112, Q115         | 2211254 or | 2SC1815 (Y) or     |
| Q116               | 2210747    | 2SC945A (Q1)       |
| Q113, Q114         | 2211706    | 2SD655 (F)         |
| Q201, Q202         | 2212256 or | 2SC2458 (LL) or    |
|                    | 2211896    | 2SC1815 (LL) (G/W) |
| Q203, Q204         | 2212303 or | 2SK381 (C) or      |
|                    | 2212304    | 2SK381 (D) (G/W)   |
| Q303, Q304         | 2212115,   | 2SC2458 (GR),      |
| Q401, Q402         | 2211255 or | 2SC1815 (GR) or    |
|                    | 2210746    | 2SC945A (P)        |
| Q505, Q506         | 2211454 or | 2SA1015 (Y) or     |
| Q603, Q605         | 2212124    | 2SA1048 (Y)        |
| Q701               | 2201074    | 2SD880 (Y)         |
| Q702, Q703         | 2211563    | 2SB562 (C)         |
| Q602, Q704         | 2212114,   | 2SC2458 (Y),       |
| Q705, Q708         | 2211254 or | 2SC1815 (Y) or     |
|                    | 2210747    | 2SC945A (Q1)       |
| Q706, Q707         | 2211682 or | 2SD468 (B) or      |
|                    | 2211683    | 2SC468 (C)         |
| Q709               | 2201060    | 2SD549             |
| Q701, Q711         | 2211554    | 2SA562TM (Y)       |
| Q712, Q713         | 2211706    | 2SD655 (F)         |
| Q715-Q717          | 2211454 or | 2SA1015 (Y) or     |
|                    | 2212124    | 2SA1048 (Y)        |
| Q724, Q725         | 2211254,   | 2SC1815 (Y),       |
| Q730, Q731         | 2212114 or | 2SC2458 (Y) or     |
| Q733               | 2210747    | 2SC945A (Q1)       |
| Q726-Q729          | 2211454 or | 2SA1015 (Y) or     |
| Q732               | 2212124    | 2SA1048 (Y)        |
| Q901               | 2211255,   | 2SC1815 (GR),      |
|                    | 2212115 or | 2SC2458 (GR) or    |
|                    | 2210746    | 2SC945A (P)        |
| Q902, Q905         | 2201074    | 2SD880 (Y)         |
| Q903, Q904         | 2201275 or | 2SB772 (Q) or      |
|                    | 2201276    | 2SB772 (P)         |
| Q906               | 2211544 or | 2SC1959 (Y) or     |
|                    | 2211543    | 2SC1959 (O)        |
| <b>Diodes</b>      |            |                    |
| D101, D101         | 2240931,   | GZA5.1X,           |
|                    | 2240932,   | GZA5.1Y,           |
|                    | 2239452 or | RD5.1EB2 or        |
|                    | 2239453    | RD5.1EB3           |
| D201, D202         | 223105,    | 1S1555,            |
|                    | 223133 or  | DS442X or          |
|                    | 223145     | 1S2076TD (G/W)     |
| D301, D302         | 223132     | 1K60               |
| D303-D308          | 223105,    | 1S1555,            |
| D502               | 223133 or  | DS442X or          |
| D602-D605          | 223145     | 1S2076TD           |
| D608               | 2241191,   | GZA18X,            |
|                    | 2241192,   | GZA18Y,            |
|                    | 2239712,   | RD18EB2,           |
|                    | 2239713,   | RD18EB3,           |
|                    | 224198,    | 05Z18X,            |

CIRCUIT NO. PARTS NO. DESCRIPTION

|                   |                    |                        |
|-------------------|--------------------|------------------------|
| D608              | 224199,            | 05Z18Y,                |
|                   | 2242951 or         | EQA01-17A or           |
|                   | 2242952            | EQA01-17B              |
| D609              | 2240931 or         | GZA5.1X or             |
|                   | 2239452            | RD5.1EB2               |
| D610, D611        | 223105,            | 1S1555,                |
| D702              | 223133 or          | DS442X or              |
|                   | 223145             | 1S2076TD               |
| D701              | 2241033 or         | GZA8.2Z or             |
|                   | 2239571            | RD9.1EB1               |
| D703-D709         | 223132             | 1K60                   |
| D901              | 223868             | 2WD2                   |
| D902              | 2241152 or         | GZA15Z or              |
|                   | 2239691            | RD16EB1                |
| D903              | 2241152 or         | GZA15Y or              |
|                   | 2239673            | RD15EB3                |
| D904              | 2241113 or         | GZA12Z or              |
|                   | 2239651            | RD13EB1                |
| D905              | 223848             | GP08B                  |
| D906              | 2240952,           | GZA5.6Y,               |
|                   | 2240953 or         | GZA5.6Z or             |
|                   | 2239473            | RD5.6EB3               |
| D907              | 2241093,           | GZA11Z,                |
|                   | 2241111,           | GZA12X,                |
|                   | 2239631 or         | RD12EB1 or             |
|                   | 2239632            | RD12EB2                |
| <b>Coils</b>      |                    |                        |
| L101, L102        | 233221             | NMC-5021               |
| L103, L104        | 233245             | NMC-2029               |
| L401, L402        | 24606072 or        | NCH-1010 or            |
|                   | 231040             | NCH-2080               |
| L403, L404        | 24606069 or        | NCH-1007 or            |
|                   | 231039             | NCH-2079               |
| L405, L406        | 24606080 or        | NCH-1022 or            |
|                   | 231038             | NCH-2078               |
| L407, L408        | 233247             | NCH4054                |
| Z001              | <b>Osc. block</b>  | NOB-019                |
|                   | 24606134           |                        |
| L701              | <b>Transformer</b> | NMIF-6030              |
|                   | 232100             |                        |
| <b>Capacitors</b> |                    |                        |
| C103, C104        | 392880337          | 3.3μF, 50V, LL         |
| C109, C110        | 352734709          | 47μF, 10V, Elect.      |
| C111, C112        | 352741009          | 10μF, 16V, Elect.      |
| C115, C116        | 352780109          | 1μF, 50V, Elect.       |
| C117-C120         | 352741009          | 10μF, 16V, Elect.      |
| C123, C124        | 352732219          | 220μF, 10V, Elect.     |
| C129, C130        | 352750479          | 4.7μF, 25V, Elect.     |
| C133, C134        | 342783399          | 0.33μF, 50V, Elect.    |
| C135, C136        | 352781599          | 0.15μF, 50V, Elect.    |
| C137, C138        | 352784799          | 0.47μF, 50V, Elect.    |
| C139, C140        | 352786899          | 0.68μF, 50V, Elect.    |
| C141, C142        | 352742209          | 22μF, 16V, Elect.      |
| C143, C144        | 352741009          | 10μF, 16V, Elect.      |
| C155, C156        | 352750479          | 4.7μF, 25V, Elect.     |
| C157, C158        | 352781599          | 0.15μF, 50V, Elect.    |
| C159, C160        | 352784799          | 0.47μF, 50V, Elect.    |
| C161, C162        | 352740479          | 4.7μF, 16V, Elect.     |
| C201-C204         | 352780109          | 1μF, 50V, Elect. (G/W) |
| C301, C302        | 352780339          | 3.3μF, 50V, Elect.     |
| C413, C414        | 352782299          | 0.22μF, 50V, Elect.    |
| C415, C416        | 352761009          | 10μF, 35V, Elect.      |
| C501              | 352782299          | 0.22μF, 50V, Elect.    |
| C502, C503        | 352780109          | 1μF, 50V, Elect.       |
| C504              | 352741009          | 10μF, 16V, Elect.      |
| C506, C507        | 352780109          | 1μF, 50V, Elect.       |
| C508              | 352741009          | 10μF, 16V, Elect.      |
| C603              | 352750479          | 4.7μF, 25V, Elect.     |
| C604              | 352742209          | 22μF, 16V, Elect.      |
| C605              | 352750479          | 4.7μF, 25V, Elect.     |
| C606              | 352741009          | 10μF, 16V, Elect.      |
| C607              | 352780109          | 1μF, 50V, Elect.       |

| CIRCUIT NO.      | PARTS NO.          | DESCRIPTION                                    |
|------------------|--------------------|--|
| C608             | 352731019          | 100 $\mu$ F, 10V, Elect.                       |
| C706, C707       | 352780109          | 1 $\mu$ F, 50V, Elect.                         |
| C708, C709       | 352781099          | 0.1 $\mu$ F, 50V, Elect.                       |
| C710             | 352780229          | 2.2 $\mu$ F, 50V, Elect.                       |
| C711             | 352932206          | 22 $\mu$ F, 10V, Non-polar Elect.              |
| C713             | 352743309          | 33 $\mu$ F, 16V, Elect.                        |
| C901, C904       | 352752229          | 2,200 $\mu$ F, 25V, Elect.                     |
| C902             | 352744719          | 470 $\mu$ F, 16V, Elect.                       |
| C903             | 352741019          | 100 $\mu$ F, 16V, Elect.                       |
| C905             | 352742219          | 220 $\mu$ F, 16V, Elect.                       |
| C906, C907       | 352741019          | 100 $\mu$ F, 16V, Elect.                       |
| C908             | 3504168            | 13,000 $\mu$ F, 25V, Elect.                    |
| C909             | 352780109          | 1 $\mu$ F, 50V, Elect.                         |
| C911             | 352780109          | 100 $\mu$ F, 16V, Elect.                       |
| C912             | 352744709          | 47 $\mu$ F, 16V, Elect.                        |
| C913             | 352742219          | 220 $\mu$ F, 16V, Elect.                       |
| C914, C916       | 352734709          | 47 $\mu$ F, 10V, Elect.                        |
| <b>Resistors</b> |                    |  |
| R123, R124       | 5215023 or 5215046 | N08HR50KBC, Semi-fixed                         |
| R127, R128       | 5104115            | N16RKM50KA35F, Input level adjustment variable |
| R401, R402       | 5216045 or 5215021 | N08HR10KBC, Semi-fixed                         |
| R433, R434       | 5215047 or 5215024 | N08HR100KBC, Semi-fixed                        |
| R606             | 5215045 or 5215021 | N08HR10KBC, Semi-fixed                         |
| R629             | 441624714          | 470ohm, 1W, Metal oxide film                   |
| R630             | 441526814          | 680ohm, 1/2W, Metal oxide film                 |
| R631             | 441528204          | 82ohm, 1/2W, Metal oxide film                  |
| R642             | 441526804          | 68ohm, 1/2W, Metal oxide film                  |
| R702             | 441622704          | 27ohm, 1W, Metal oxide film                    |
| R709             | 5215042 or 5215018 | N08HR1KBC, Semi-fixed                          |
| R712             | 441724704          | 47ohm, 2W, Metal oxide film                    |
| R721-R728        | 49121392408        | 3.9kohm $\times$ 8, 1/8W, Network              |
| R737-R740        | 49121222404        | 2.2kohm $\times$ 4, 1/8W, Network              |
| R751-R758        | 49121392408        | 3.9kohm $\times$ 8, 1/8W, Network              |
| R901, R902       | 441520224          | 2.2ohm, 1/2W, Metal oxide film                 |
| R904             | 441520474          | 4.7ohm, 1/2W, Metal oxide film                 |
| R905             | 441520224          | 2.2ohm, 1/2W, Metal oxide film                 |
| R908             | 441722704          | 27ohm, 2W, Metal oxide film                    |
| R914             | 441523304          | 33ohm, 1/2W, Metal oxide film                  |
| <b>Switches</b>  |                    |  |
| S601-S603        | 25035378           | NPS-362-L342, push                             |
| <b>Relay</b>     |                    |  |
| RL601            | 25065174           | NRL-2P1ADC12-09                                |
| <b>Terminals</b> |                    |  |
| P601             | 25045120           | NPJ-4PDBL49, Input/output                      |
| P604             | 25050064           | NSCT-5P18, DIN (G/W)                           |
| <b>Plugs</b>     |                    |  |
| P605             | 25055037           | NPLG-6P28, Rec/pb head                         |
| P606             | 25055038           | NPLG-2P29, Erase head                          |
| P607             | 25055047           | NPLG-12P35, Meter                              |
| P704             | 25055106           | NPLG-9P90, Program                             |
| P705             | 25055107           | NPLG-10P91, Operation switch                   |
| P706             | 25055104           | NPLG-7P88, Remote control                      |
| P707             | 25055099           | NPLG-2P83, Tape counter                        |
| <b>Sockets</b>   |                    |  |
| P608             | 25050141           | NJPS-4P-S, Jumper, Rec/play/pause              |
| P609             | 2000255            | NSAS-8P-193, Dolby switch                      |
| P610             | 2000255            | NSAS-8P-193, Tape selector switch              |
| P611             | 2000254-1          | NSAS-6P-192, Hall IC                           |
| P612             | 2000254-1          | NSAS-6P-192, Timer                             |
| P702             | 2000252            | NSAS-18P-190, Tape mechanism                   |
| P703             | 2000253            | NASA-6P-191, Tape mechanism                    |
| <b>Radiators</b> |                    |  |
|                  | 27160029           | RAD-07   |

| CIRCUIT NO.   | PARTS NO. | DESCRIPTION      |
|---------------|-----------|------------------|
| <b>Screws</b> |           |                  |
|               | 82113008  | 3P+8FN, Pan head |

#### DOLBY SWITCH PC BOARD ASS'Y (NASW-1755)

| CIRCUIT NO. | PARTS NO. | DESCRIPTION  |
|-------------|-----------|--------------|
| S604-S606   | 25035379  | NPS-322-L343 |

#### HALL IC PC BOARD ASS'Y (NATD-1756)

| CIRCUIT NO. | PARTS NO.        | DESCRIPTION              |
|-------------|------------------|--------------------------|
| Q734        | 222558 or 222470 | DN6838 or DN838, Hall IC |

Caution: As the position of leg of BN6838 and DN838 differ, use the same Hall IC when replacing.

|          |              |
|----------|--------------|
| 27190173 | Holder       |
| 27140811 | Bracket, pcb |

#### TAPE SELECTOR INDICATOR PC BOARD ASS'Y (NAIND-1757)

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|-------------|----------|-------------|
| D612-D614   | 225134   | GL-3NG1     |
|             | 27270103 | Spacer      |

#### TAB INDICATOR PC BOARD ASS'Y (NADIS-1758)

| CIRCUIT NO. | PARTS NO. | DESCRIPTION    |
|-------------|-----------|----------------|
| D714        | 225137    | SEL-2413E, LED |
|             | 27190228  | Holder         |

#### LAMP PC BOARD ASS'Y (NAPL-1759)

| CIRCUIT NO. | PARTS NO. | DESCRIPTION      |
|-------------|-----------|------------------|
| PL901       | 210165    | 14V, 150mA, Lamp |

#### TIMER SWITCH PC BOARD ASS'Y (NASW-1760)

| CIRCUIT NO. | PARTS NO. | DESCRIPTION            |
|-------------|-----------|------------------------|
| S712        | 25065224  | NSS-2398, Slide switch |

#### LED PC BOARD ASS'Y (NADIS-1761)

| CIRCUIT NO. | PARTS NO. | DESCRIPTION        |
|-------------|-----------|--------------------|
| D710        | 225130    | SEL-510, LED       |
| P708        | †000257   | NSAS-9P195, Socket |

#### OPERATION INDICATOR PC BOARD ASS'Y (NAIND-1762)

| CIRCUIT NO. | PARTS NO. | DESCRIPTION      |
|-------------|-----------|------------------|
| D615, D713  | 225142    | SEL-2913K, LED   |
| D616, D617  | 225137    | SEL-2413E, LED   |
| D712        |           |                  |
| D711        | 225141    | SEL-2213C, LED   |
|             | 27190227  | Holder, selector |
|             | 24601143  | Tape counter     |

#### REMOTE CONTROL TERMINAL PC BOARD ASS'Y (NARM-1763)

| CIRCUIT NO. | PARTS NO. | DESCRIPTION             |
|-------------|-----------|-------------------------|
| P701        | 25050070  | NSCT-7P20, DIN terminal |
| P709        | 22000256  | NSAS-7P194, Socket      |

#### OPERATION SWITCH PC BOARD ASS'Y (NASW-1765)

| CIRCUIT NO. | PARTS NO. | DESCRIPTION               |
|-------------|-----------|---------------------------|
| S701-S711   | 25035275  | NPS-111-S239, Push switch |
| P710        | 2000258   | NSAS-10P-196, Socket      |

NOTE: (G): Only 220V model  
(W): Only 120/220V model